CYPRESS
INTEGRATION SOLUTIONS

SPX-7400 Series

Suprex® Reader Extender - Fiber Optic Interface

Operations Manual

SPX-7400 shown with EXP-2000

MADE IN U.S.A PRODUCT

SPX-7400_MAN_0414

Suprex® SPX-7400 Series Overview

This manual covers the operation and setup of the Cypress Suprex® Fiber Optic SPX-7400 series units.

Overview:

The SPX-7400 series of Fiber Optic solutions provides a bridge from Card Readers with gates or door hardware to most access control manufacturers panels. The SPX or Suprex® products include both the remote (Door/Gate) unit and the central (AC Panel) unit.

Features:

-- Available in single mode or multi-mode
-- Includes complete solution with remote (reader/gate/door) and central (panel) interface.
-- Service mode for setup and configuration of Expansion modules.
-- Field configurable reader formats
-- Multifunction indicator for determining operational status of the unit
-- Auxiliary I/O connections available for Door/Gate/Panel status signaling.
-- Multiplexing of RF bridge providing for additional door/gate on a single Fiber link.
-- Economical expansion capabilities using Suprex® Lynk technology

Fiber Optic Specifications:

Module connections utilize standard "ST" style connections

NOTE: Single Mode or Multi Mode must be Specified at time of order.

SPX-7400 Multimode:	Loss Budget	13 dB	850 nm	62.5/125 Fiber
	Loss Budget	9 dB	850 nm	50.0/125 Fiber
SPX-7410 Single mode:	Loss Budget	20 dB	1300 nm	9/125 Fiber

Electrical and Mechanical Specifications

Physical	SPX-7400 - Aluminum Enclosure 4.45” x 3.08” x 2.0” (Each Unit)	
Temp	Storage(-55˚C to + 150˚C) Operating(-40˚C to +80˚C)	
Humidity	95% (non-condensing)	
Power	Input	Unreg Input 8 to 16 VDC* @ 300mA Max
	Output	+5VDC @100mA
Data I/O	Interface	Reader -Wiegand, Strobed (Clock & Data), F/2F LED - 0 - 30V
Relays	Max Switching	(220Vdc 30W (resistive) 1A)
		(250Vac 37.5VA 1A)
	Running Spec with load	(30Vdc 1A (resistive), 1 x 10
		125Vac .3A (resistive), 1 x 10

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Cable Recommendations
Belden or equivalent

SPX-1300, SPX-7500 and EXP-1000/2000

RS-485 connection

PVC - Belden 9744 - 22 AWG 2 twisted pair, 4,000 feet max.
Plenum - Belden 82741 - 22 AWG 2 twisted pair, 4,000 feet max.

SPX-1300, SPX-7200, SPX-7400/10, SPX-5601, SPX-5621, SPX-5521, WMR-7211, EXP-1000/2000

Wiegand, power and LED

PVC - Belden 9942 or 8777 - 22 AWG 3 pair shielded, 250 feet max.
Plenum - Belden 82777 - 22 AWG 3 pair shielded, 250 feet max.
PVC - Belden 9873 - 20 AWG 3 pair shielded, 500 feet max.
Plenum - Belden 83606 or 85164 - 20 AWG 3 pair shielded, 500 feet max.

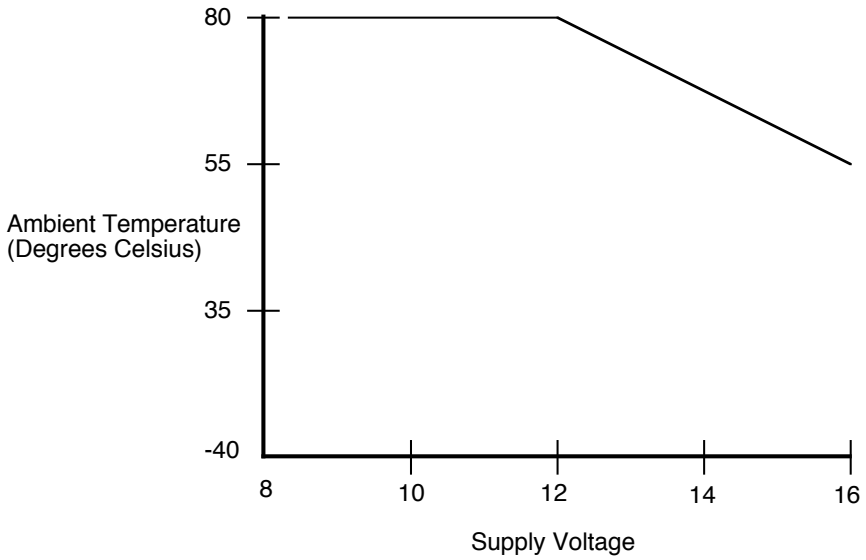
Inputs/outputs

PVC - Belden 8451 - 22 AWG 1 pair, 1,000 feet max.
Plenum - Belden 82761 - 22 AWG 1 pair, 1,000 feet max.

Power

PVC - Belden 8461 - 18 AWG 1 pair, 25 feet max.
Plenum - Belden 82740 - 18 AWG 1 pair, 25 feet max.

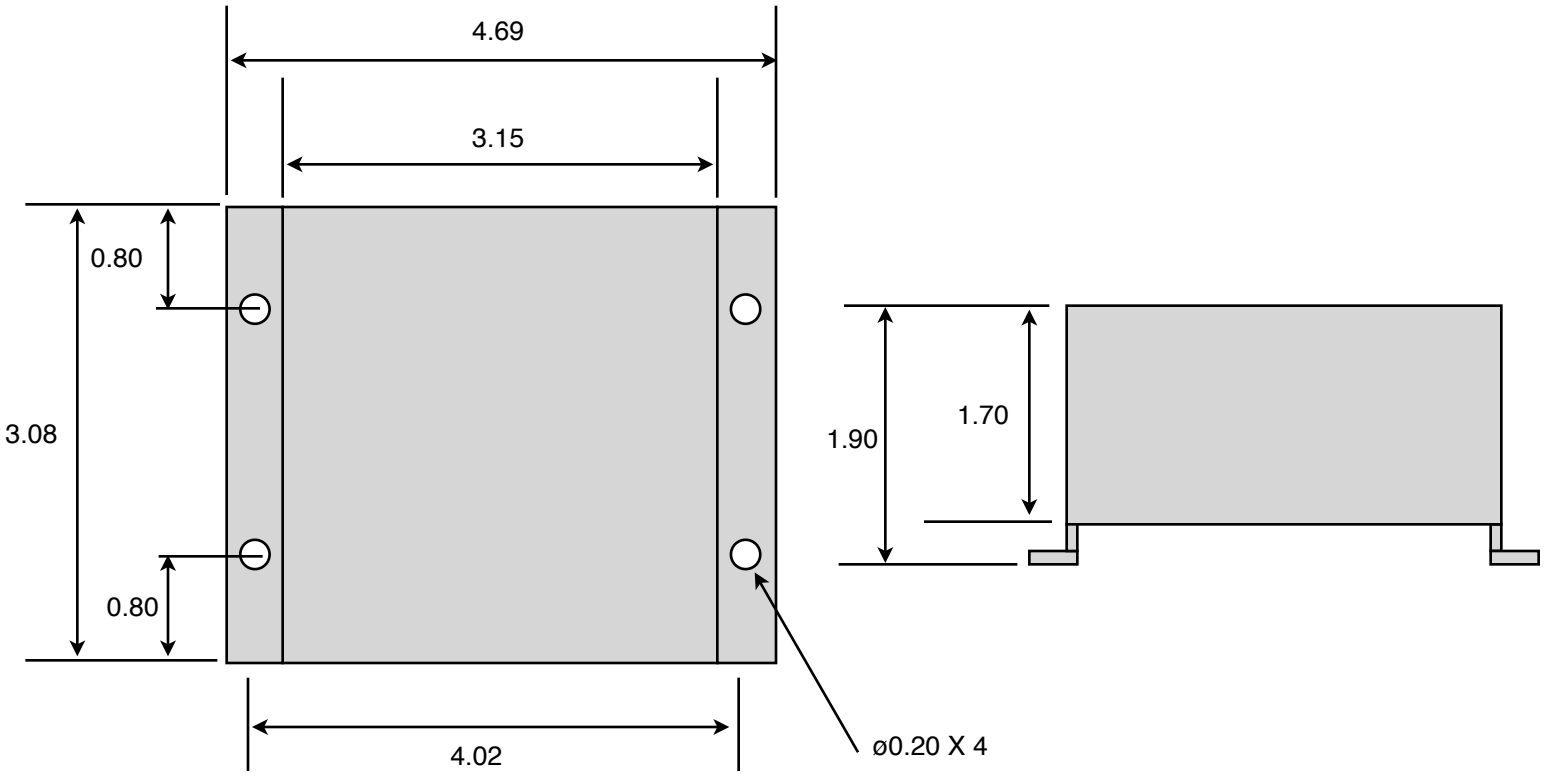
Temperature Rating vs Voltage Derating Curve



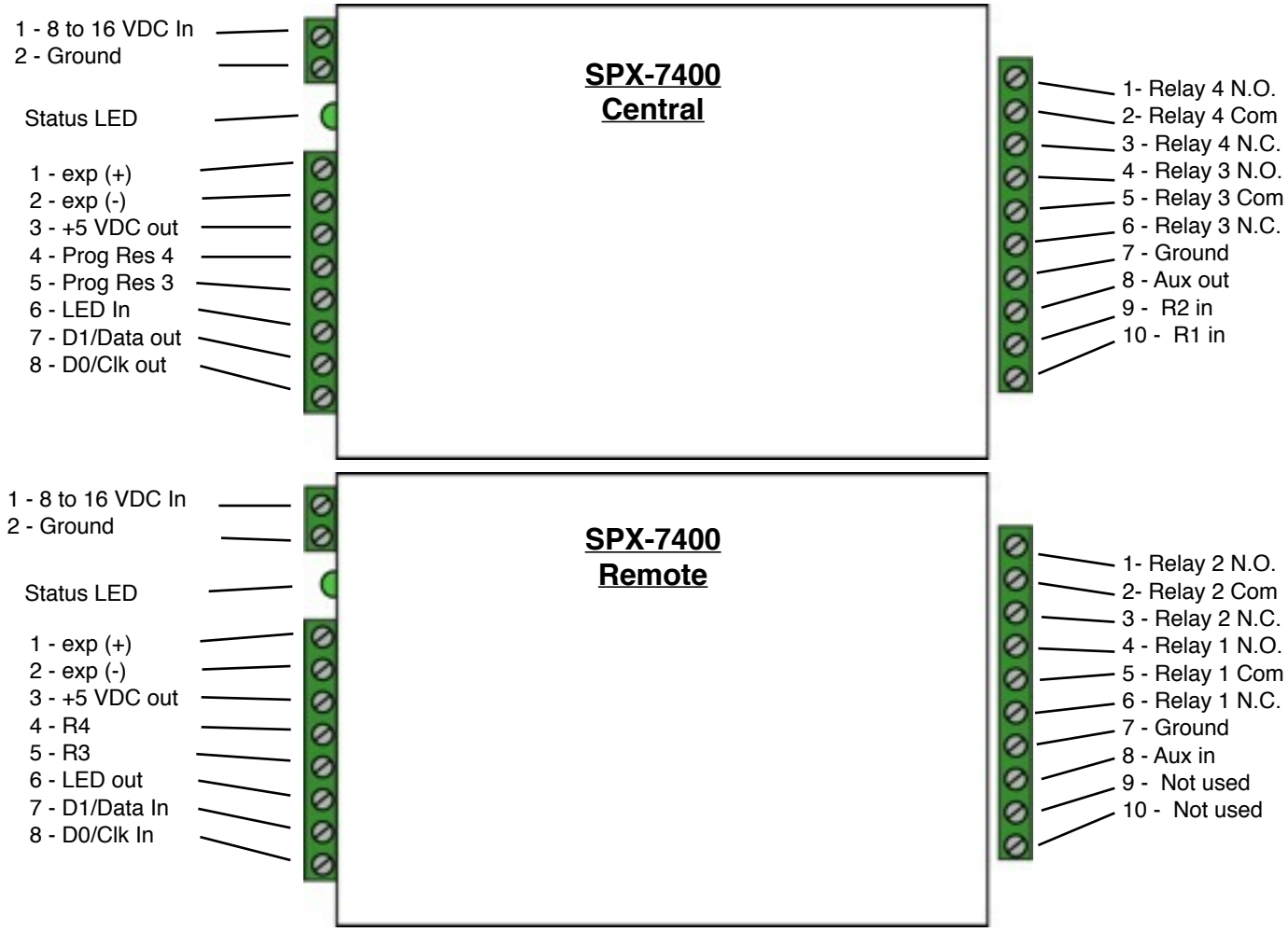
Temperature/Voltage de-rating curve

The Suprex® units should be operated with a filtered 12 Volt nominal DC supply.
Any voltage between 8 and 16 volts can be utilized by following the temperature /voltage derating curve.
Voltage should not exceed 16 VDC under normal operating conditions.

Cypress Suprex® SPX-7400 Enclosure Dimensions



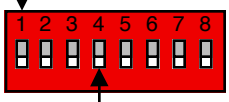
External connections and DIP Switch Settings



Central Unit Settings

DIP Switch #1 OFF

See appendix for Expansion module Setup



Dip switch #4 is ON
-Disable Pullup resistors

Dip switch #4 is OFF
-Enable Pullup resistors

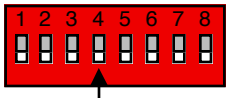
		Switch 6	7	8
Wiegand	0			
Wiegand / No Filter	1			x
Strobed Rising Edge (MR-5)	2		x	
Strobed Rising Edge (Dorad0 644)	3		x	x
Strobed Rising (Mag-Tek)	4	x		
Strobed Falling Edge	5	x		x
Reserved	6	x	x	
F2F	7	x	x	x

x = ON

Remote Unit Settings

DIP Switch #1 OFF

See appendix for Expansion module Setup



Dip switch #4 is ON
-Enable Pullup resistors

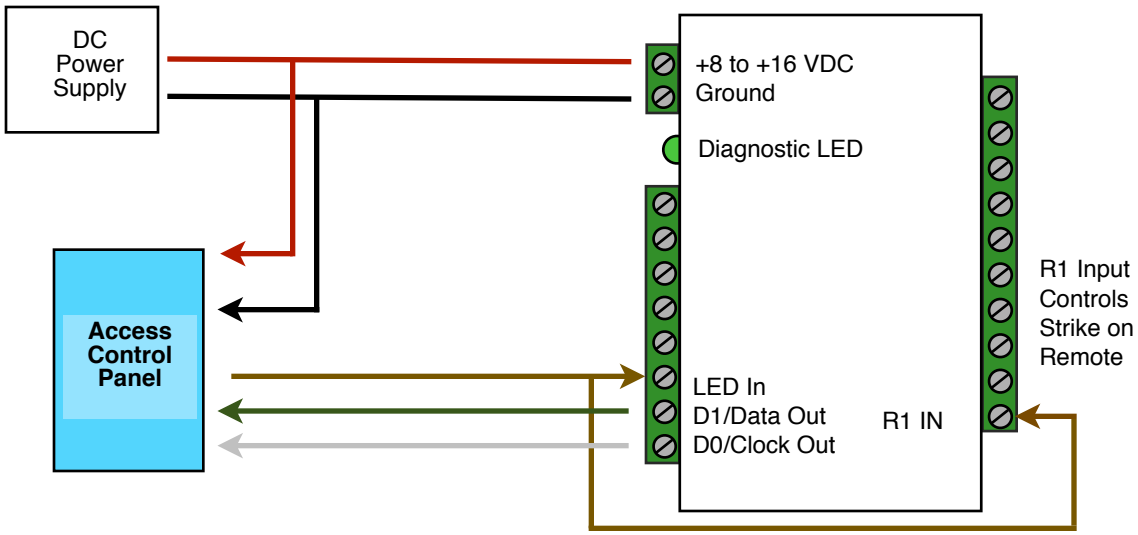
Dip switch #4 is OFF
-Disable Pullup resistors

		Switch 6	7	8
Wiegand	0			
Wiegand / No Filter	1			x
Strobed Rising Edge (MR-5)	2		x	
Strobed Rising Edge (Dorad0 644)	3		x	x
Strobed Rising (Mag-Tek)	4	x		
Strobed Falling Edge	5	x		x
Reserved	6	x	x	
F2F	7	x	x	x

x = ON

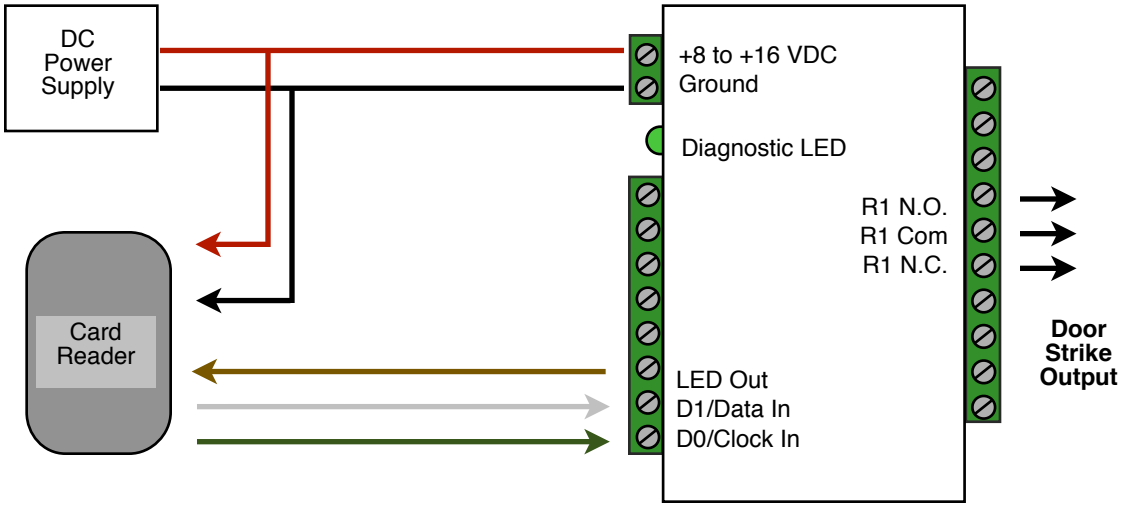
Quick Reference For Typical Connections

SPX-7400 Series Central

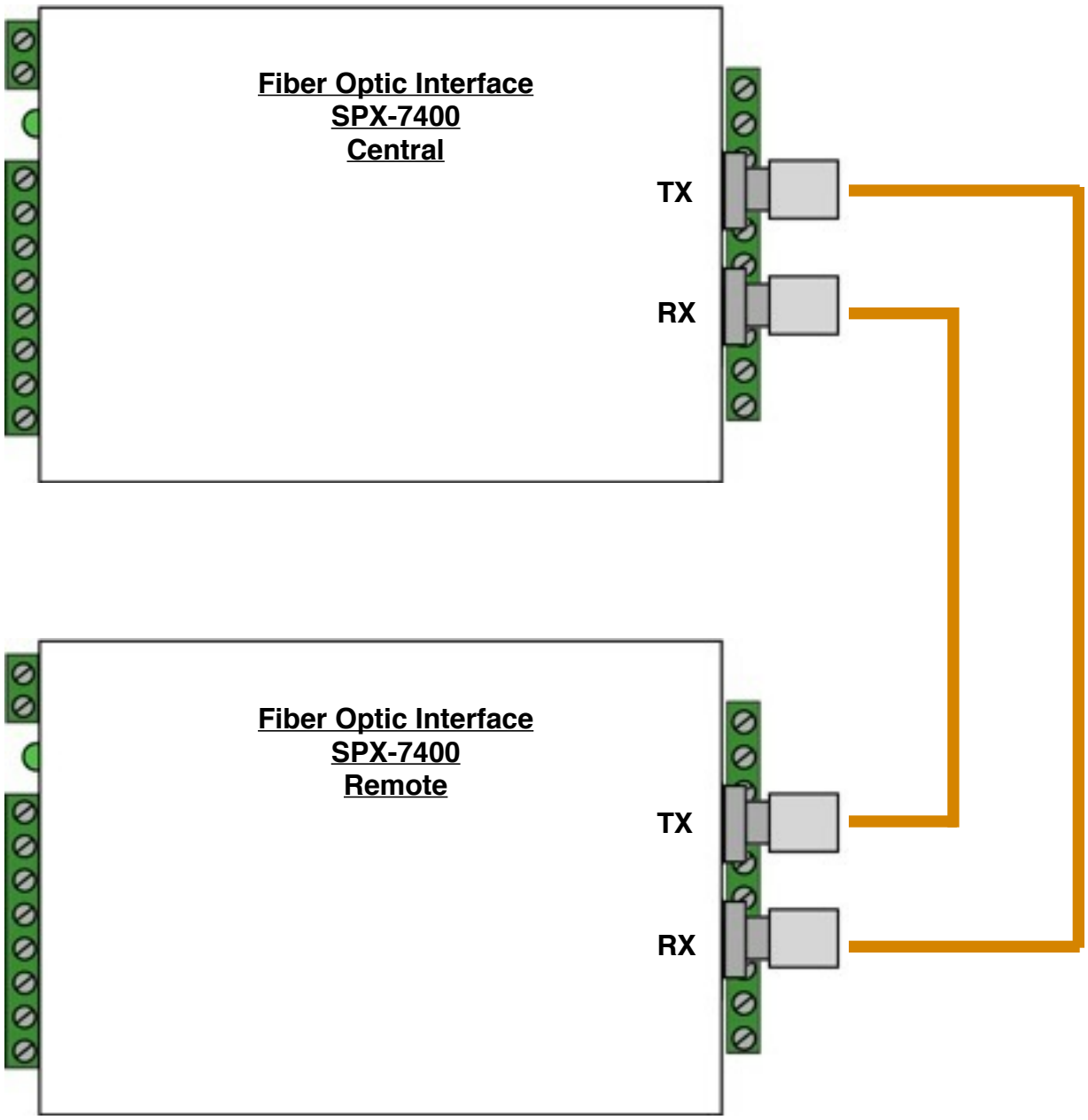


See page 10 for other strike control options

SPX-7400 Series Remote



Fiber Optic Connections



Cypress Suprex® SPX-7400 Series - Setup and Pre-installation

Bench Testing:

Before installing the units in the field they should be assembled and tested at a convenient “Bench top” location. This will make it easier to verify / change settings and check operation when both units are visible at the same time.

It is also a chance to become familiar with the system if this is the first time using the Suprex® system. It is much more difficult to setup and test the units when they are several thousand feet apart.

1. Connect the Remote and Central unit Fiber Optic ports together using a crossover connection using a section of fiber optic cable as shown in the diagram in this manual.

2. Connect a suitable power supply to both units. Each unit should be provided with 8 - 16 volts DC and a minimum of 500mA.

3. Apply power. After about a short delay, both units Diagnostic LED should indicate communication by illuminating with a periodic Green pulse.

5. Touch a jumper wire from the Ground connection the the Relay 1 input on the Central unit. Relay #1 on the Remote unit should activate with an audible click. A VOM or continuity tester should show the Relay #1 normally open contacts on the Remote unit closing when the Relay #1 input is activated (connected to ground) on the Central unit.

6. Units are shipped from the factory set for the Wiegand data format. If a different format is required set the DIP switch to the required reader and panel format.

7. If a reader and panel is accessible, connect the reader to the Remote unit and the Central unit to the panel and verify that card reads are being accepted by the access control system. If any troubleshooting is necessary, it will be easier to do with both units in close proximity to each other.

8. If Expansion modules are used with the system, refer to the Expansion Module Appendix in this manual.

9. Once these steps are completed, the units are ready for installation it their permanent locations and final commissioning as a system.

Cypress Suprex® SPX-7400 Series - Status Indicators

LED Diagnostic Indicator:

The LED Diagnostic indicator provides information on the operational status of the unit.

If the units are not communicating, viewing the diagnostic indicator LED's may help to determine the nature of the problem.

When the Suprex® units are operating correctly and have a valid communication channel between the Remote and Central units, the Diagnostic indicators on each unit will flash green rapidly (2-3 flashed per second).

DIAGNOSTIC LED NOT ILLUMINATED:

If the LED(s) are not illuminated on the unit(s) then the unit is not getting power or there is an electrical problem. The Diagnostic LED's will be illuminated Red/Green or flashing whenever power is applied.

CENTRAL UNIT FLASHING BETWEEN RED/GREEN:

With power applied and no communication path between the Remote and Central, the Central unit will flash the diagnostic indicator alternately between Red and Green.

REMOTE UNIT ILLUMINATED RED:

The Remote unit will diagnostic LED will illuminate solid (not flashing) red if it is not receiving communication from the Central.

REMOTE AND CENTRAL UNITS FLASHING BETWEEN RED/GREEN:

The Central is not Receiving communication from the Remote.

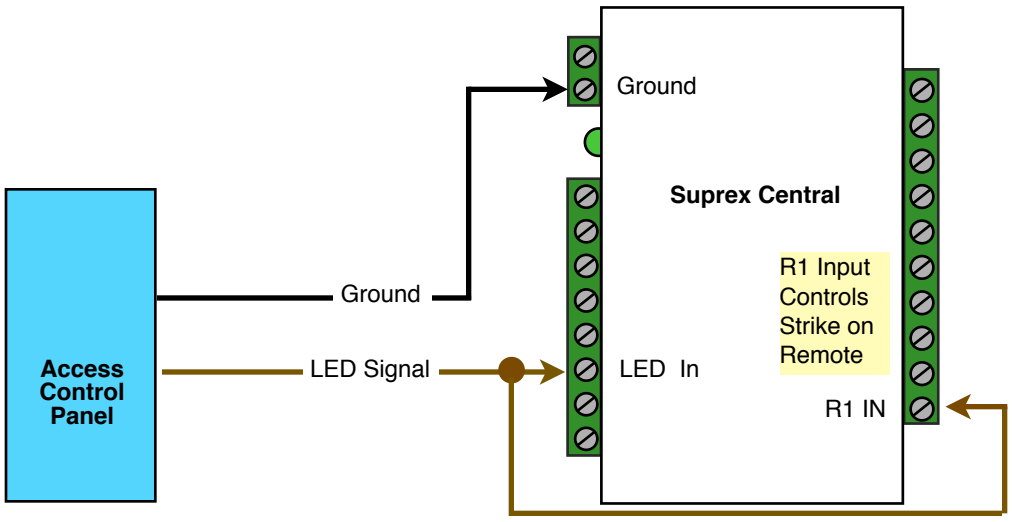
Cypress Suprex® F.O. Series - Door Strike and LED I/O

Note: The LED and Door Strike operation of the FO Suprex® differs from previous Suprex® version

To activate the relay on the Remote unit, connect as shown below. These connections can be used to allow the Remote relay to operate a DOOR STRIKE, GATE, or other locking hardware. Refer to following pages in this document for details of each I/O operation and connection.

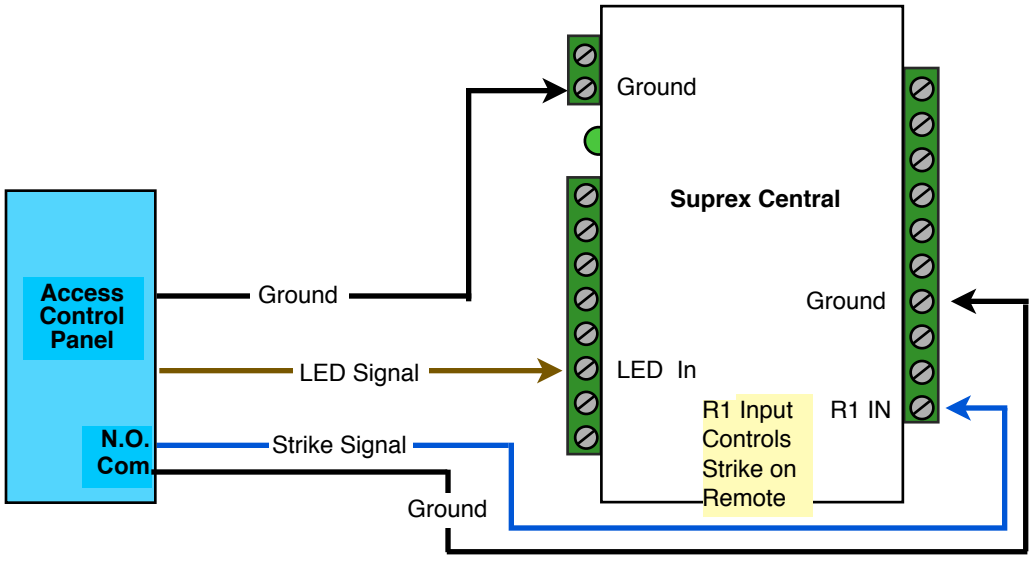
There are two relays available for accessory outputs at the Remote end. Either relay can be used to provide the Door Strike or Gate activation function. This example uses Relay 1.

Wiring Example - Door Strike Follows LED



Only Relay and LED Connections are shown for clarity, refer to previous diagrams for Power and Data connections.

Wiring Example - Door Strike does not follow LED

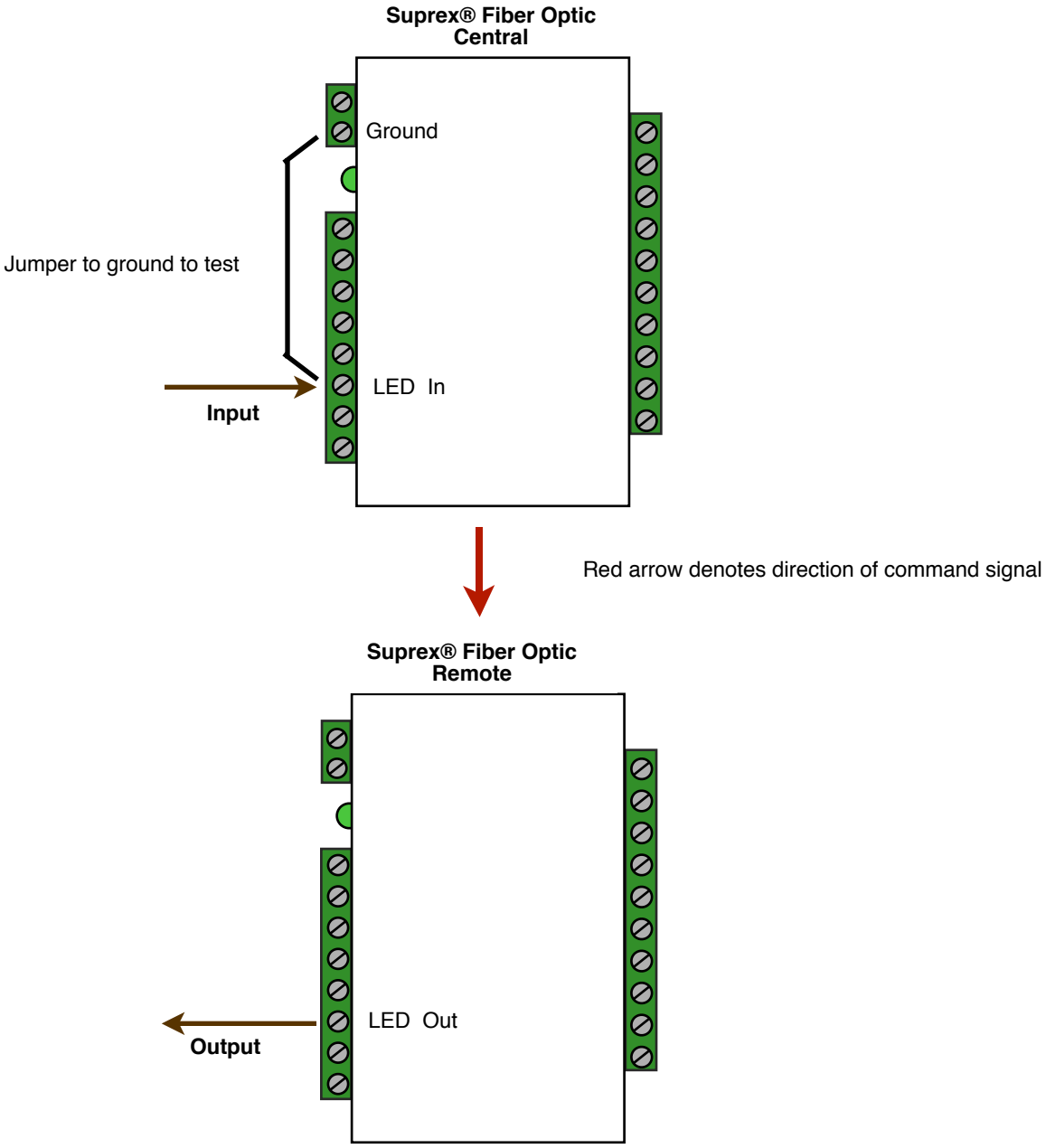


Cypress Suprex® F.O. Series - Door Strike and LED I/O

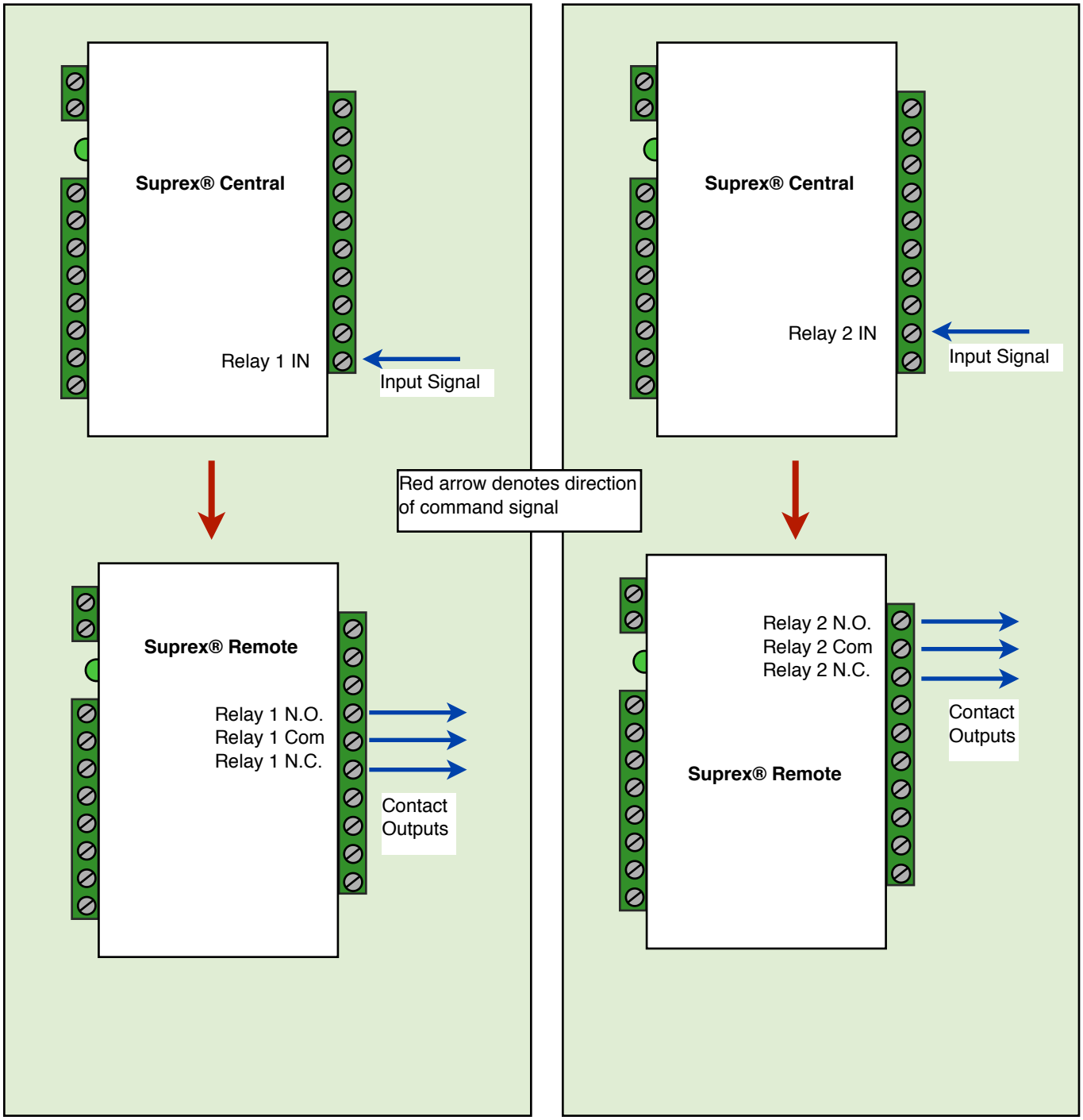
The Cypress SPX-7400 provides additional data channels to support access control hardware such as door strikes, tamper alarms, request to exit status, etc. These signals are sent to and from the Remote and Central units without the need to run additional wiring.

The accessory control I/O use active low inputs. When the inputs are floating (nothing connected) the associated output will be set to a high level. When the input is set to 0Volts (Ground) the input will activate its associated output. All Accessory outputs are Open Collector type and will switch to Ground when activated.

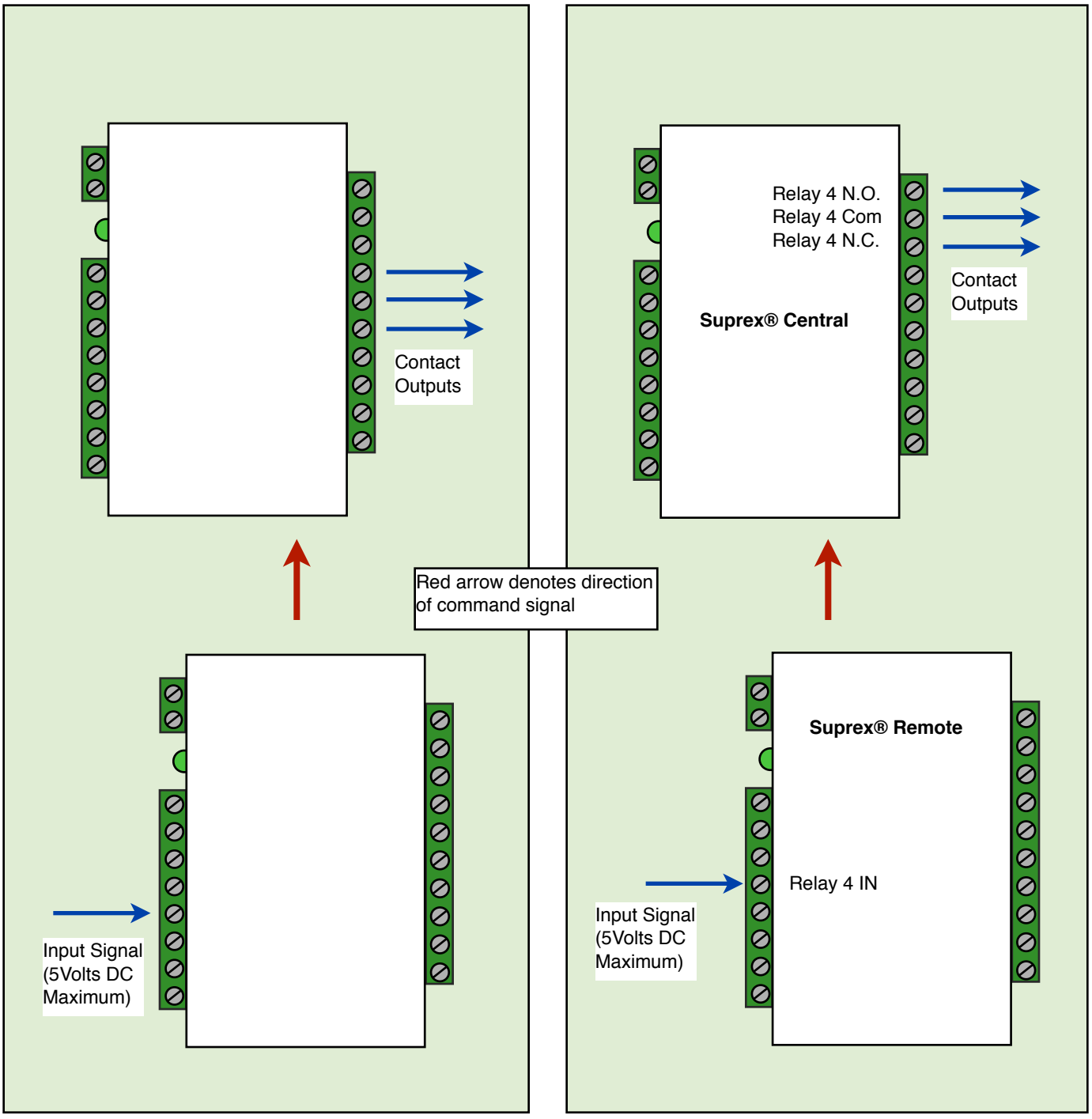
Each input will have an associated output. See the following pages for a diagram of each I/O pair.Inputs can be tested by making a jumper connection to ground and monitoring the associated output.



Cypress Suprex® F.O. Series - Relay Controls



Cypress Suprex® F.O. Series - Relay



Relay 3 functions as an Alarm relay and monitors the condition of the communication link between the Central and Remote units. Relay 3 is activated when power is applied and the communication link between the Central and Remote is functioning. Relay 3 will become deactivated (Alarm condition) when either the Relay 3 input on the remote is active OR the Remote unit is unable to communicate with the Central unit. See APP NOTE FOR DETAILS

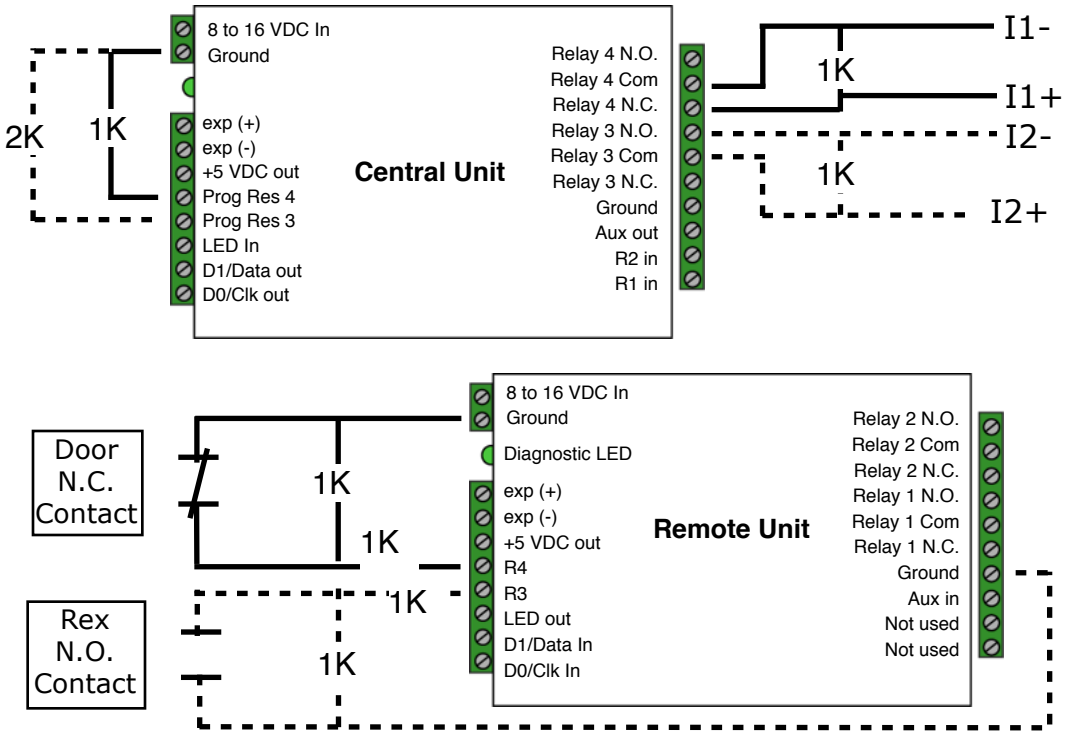
SPX-XXXX Application Note

Using Supervised Contacts with the SPX-series Extenders

Applies to the following products: SPX-5501, SPX-5601, SPX-5521, SPX-5621, SPX-7400, SPX-7410, SPX-7200, SPX-7500, All RIM series products.

This application note describes the connections necessary to convey supervised contact status over a Suprex® communication link. The configurations described in this app note should apply to most panels that utilize supervised contacts. When connected as described, the Suprex® system will provide a supervised signal to the panel interface by reading the supervised status of the contacts connected to the Suprex® Remote unit.

Theory of operation: The Access control panel is looking for a certain value of resistance connected to the supervised contact terminals. The Suprex® Central unit will provide these resistance values locally at the panel so that the correct supervised status is maintained. At the same time, the Remote unit must maintain supervision of the wires connected to the relays and switches that are connected to the remote access point. The contact supervision is provided by the Remote unit. The Suprex® system does this by comparing the value of programming resistor at the Central unit with the resistance seen at the Remote interface terminals. When there is a difference in the two values, the Relay on the Central unit is activated.
There are two different examples. One example is monitoring a normally closed contact at the Remote unit, and the other example is monitoring a normally open contact at the Remote unit. In the examples given, a normally closed contact will require a programming resistor of 1K and a normally open contact will require a programming resistor of 2K. Other resistor values can be used but 1K resistors are the most common. Other resistance values will require different value(s) for the programming resistor(s).



SPX-7400 Setup - Using Expansion Modules

Before using EXP-2000 Expansion modules with the SPX-7400 system, it will be necessary to perform a short configuration process. This process determines if the 7400 will utilize expansion modules, and if so, how many will be used with the system. Each SPX-7400 link can support up to 7 expansion modules.

SPX-7400 units are shipped in the factory default condition. Factory default units will be setup to function as SPX-7400 units without expansion modules. Only communications between the 2 gateway units will be active.

Setup Process:

1. With power off, set the DIP switch on the Central unit according to the table below.

2. Apply power.
   The Diagnostic LED should display a steady Green indication.

3. Remove power
   Set DIP switch #1 OFF. Any other DIP switches can now be set as required (Reader family/ Pullup resistors).
   The Central unit is now configured. No expansion module configuration is required for the Remote unit.

4. The expansion modules will need to be setup and correctly addressed. See EXP-2000 manual for details of Expansion module setup and configuration. The Expansion units are addressed, and added to the system as pairs.

5. Connect the Expansion modules into the system as indicated in this wiring diagram.

Operation with Expansion Modules:

The SPX-7400 system Remote and Central gateway units will operate as a standard pair Suprex® units, all of the I/O and data terminals are available for use with readers and access control systems. There are some minor differences in operation when using the expansion modules. Each pair of

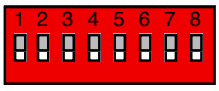
1. The Diagnostic LED on the Gateway units will indicate the status of the main (gateway) communication link only.

2. The Alarm relay on the Central Gateway unit will deactivate (indicate alarm condition) when the communication fails between the Gateway units or ANY of the the Remote or Central Expansion units.

3. Paired Expansion units will be functionally similar to the standard SPX-1300 Wiegand Suprex® system.

Central Unit Configuration Mode Settings

	Switch 1 2 3 4 5 6 7 8
Gateway only - No EXP	1 0 0 1 0 0 0 0
1 EXP Pair used	1 0 0 1 0 0 0 1
2 EXP Pair used	1 0 0 1 0 0 1 0
3 EXP Pair used	1 0 0 1 0 0 1 1
4 EXP Pair used	1 0 0 1 0 1 0 0
5 EXP Pair used	1 0 0 1 0 1 0 1
6 EXP Pair used	1 0 0 1 0 1 1 0
7 EXP Pair used	1 0 0 1 0 1 1 1



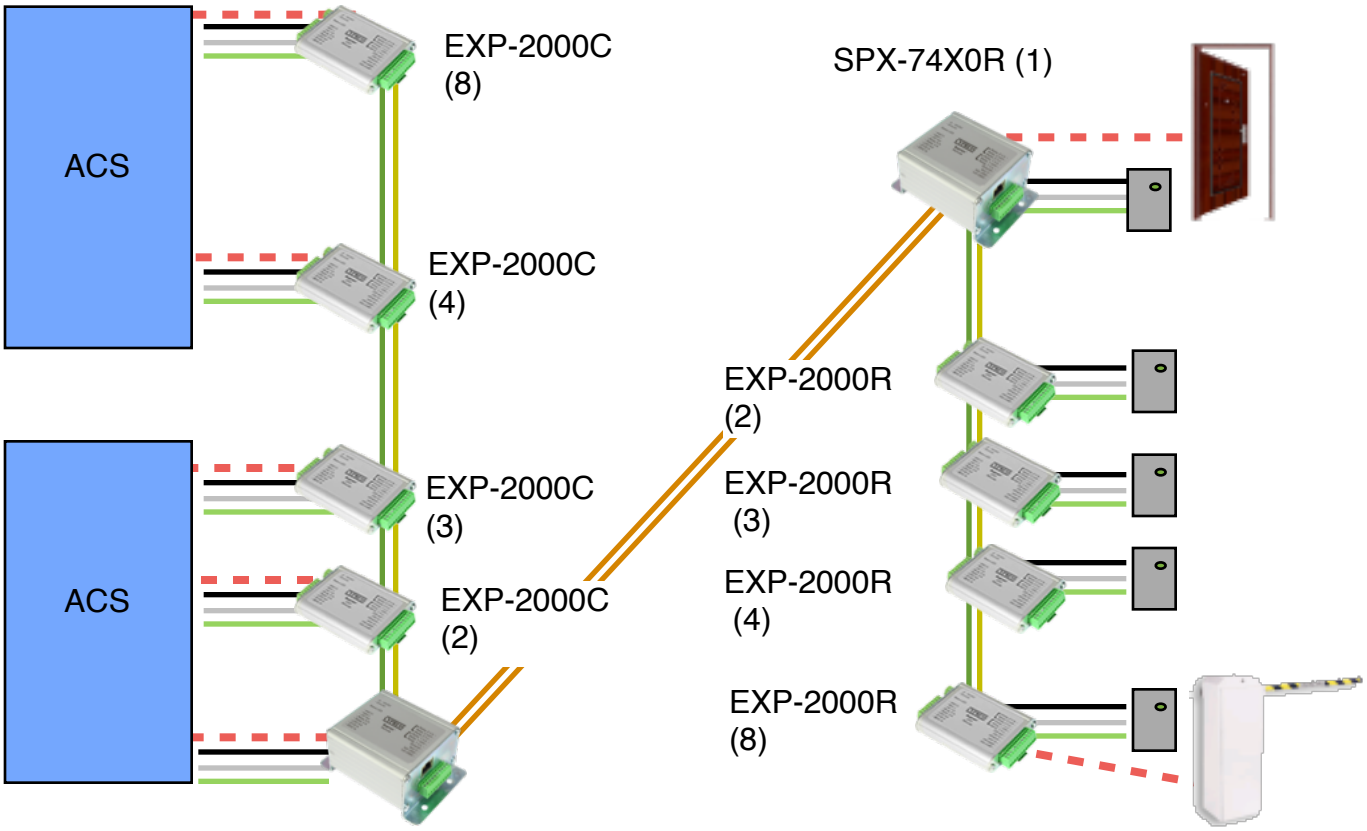
1 = ON

0 = OFF

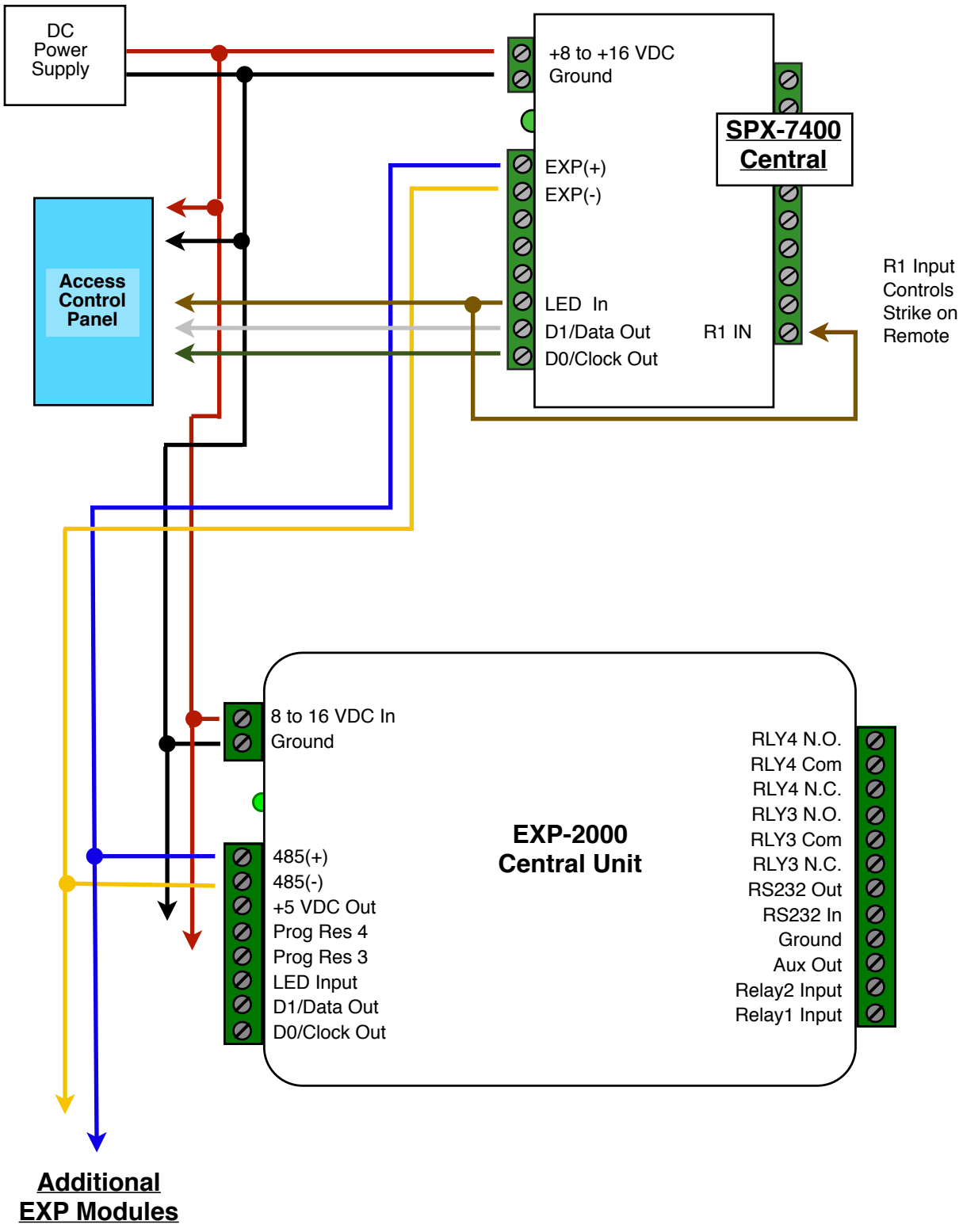
See EXP-2000 Manual for further setup instructions

Cypress Suprex® LYNK
Fiber Optic Solution

Door / Parking Gate

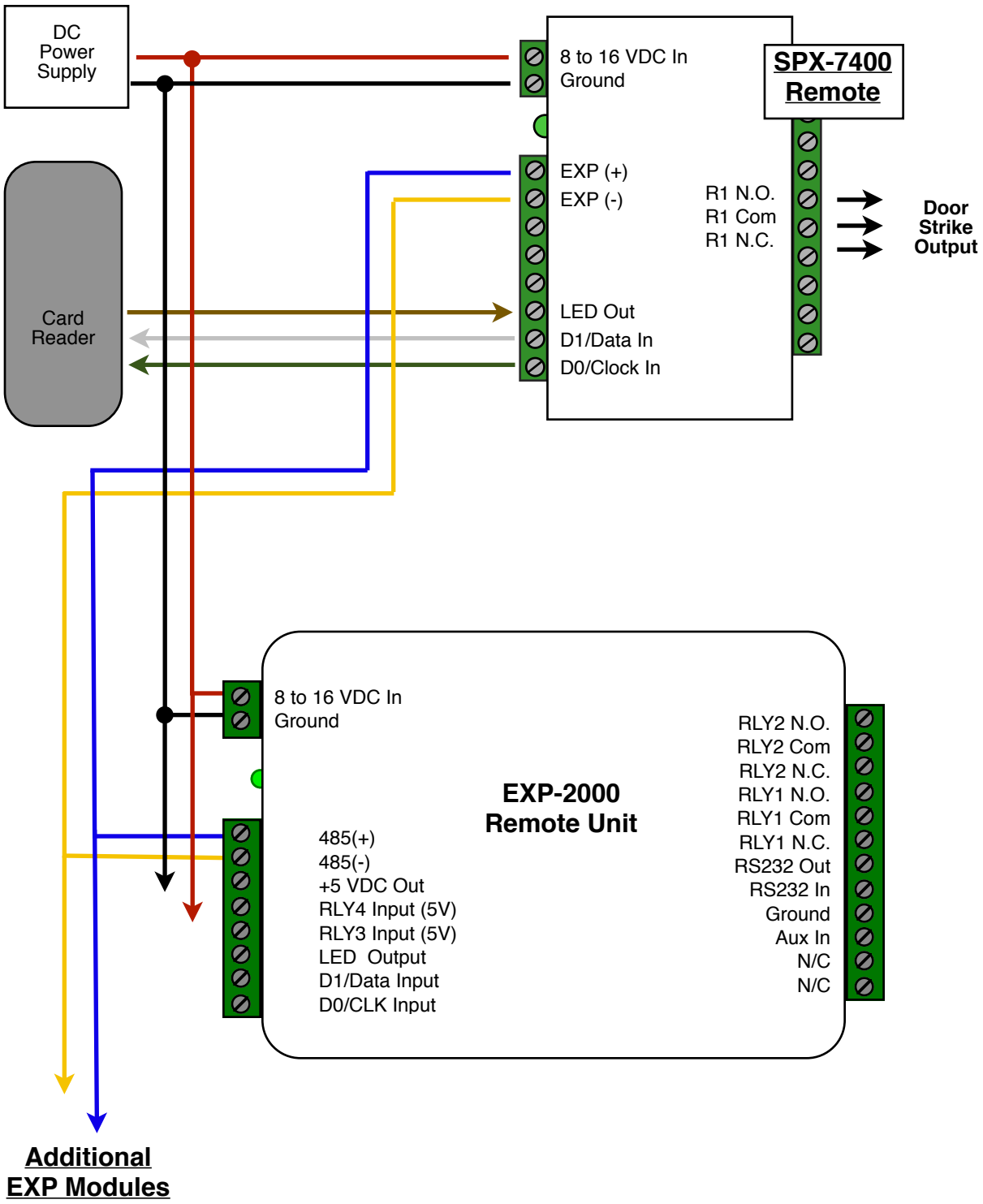


Cypress Suprex® Series - Wiegand Expansion Module
Panel "Central" interface



See EXP-2000 Manual for further setup instructions

Cypress Suprex® Series - Wiegand Expansion Module
Reader/Door "Remote" interface



See EXP-2000 Manual for further setup instructions